POISONING DUE TO CHEESE.

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On October 21st I received a communication informing me that a small shopkeeper in the borough of Bethnal Green had purchased some Dutch cheese from a firm, Messrs. A., B., and C., carrying on the business of wholesale provision dealers in the borough of Finsbury. It was alleged that this cheese was the cause of illness in certain persons who ate it, nine of whom were traced. On inquiry, it was found that the consignment had been returned to the wholesale dealers in Finsbury.

On receiving this information, I sent an inspector to Messrs. A., B., and C., and they obliged me by handing over a small sample of the cheese in question. They had obtained this cheese from a large wholesale firm in Central London. On examination, the cheese appeared to be in excellent condition. As far as I could judge, it possessed no unhealthy characteristics as regards odour, colour, or consistence. In order to test the cheese, I ate an ounce or two of it, and did not detect anything exceptional in the taste. Four or five hours afterwards, however, I suffered acutely from similar symptoms to those of the other persons who had eaten any of the cheese. Next day I informed Messrs. A., B., and C. of what had occurred, and to demonstrate that these illnesses had no relation to the cheese in question, Mr. A., the head of the firm, ate about 6 ounces of the same cheese. On the following day he suffered acutely from the same symptoms as the rest of those who had eaten of the cheese, and he admitted that his illness was evidently due to the cheese. In the light of these facts, he handed over to me the remaining portion of the consignment.

On October 28th I received a visit from Mr. K., who came to complain that he, his wife, and two daughters had eaten some Dutch cheese bought of Mr. Z., in Finsbury, and that all four of them had suffered from acute poisoning.

On inquiry, I found that Mr. Z. had obtained his Dutch cheese from the same consignment as that which had caused poisoning in Bethnal Green, and from which Mr. A. and myself had suffered. Moreover, Mr. Z. admitted that he and his daughter had also eaten some of this cheese and had suffered from poisoning, and that he had returned the remainder of the cheese to the wholesale firm as poisonous cheese. The total cases traceable up to the present from the Finsbury portion of the consignment are therefore seventeen.

The symptoms of illness in all these seventeen cases occurred in from two to eight hours after eating the cheese in question, which came from the same consignment. Moreover, the symptoms were similar—namely, epigastric pain, rigors, vomiting, diarrhœa, prostration, and some fever. The degree of sickness does not appear to have depended upon the amount of cheese eaten. There has been no death attributed to the poisoning, and in general the symptoms appear to have passed off in the course of forty-eight hours.

A short incubation period suggests that the poison was "available" in the cheese as a *product* of previous changes, possibly bacterial, set up in the cheese. A long incubation period between eating the food and symptoms of poisoning would suggest that the persons affected had consumed, not the products of bacteria, but the *bacteria themselves*, which had then taken some little time to produce their injurious effects in the persons eating the food. In the present case the incubation period was comparatively short, and the acuteness of the symptoms did not appear to have a direct relationship to the amount of cheese eaten.

These two facts in relation to cheese-poisoning at once brought to my mind the outbreaks of cheese-poisoning which occurred in Michigan, U.S.A., in 1883 and 1884. Three hundred persons in all were affected, and the illness, which was similar to that described above, was traced by Professor V. C. Vaughan to a poisonous ptomaine present in the cheese, and to which he gave the name of tyro-toxicon. It is not improbable that this ptomaine is a product of bacterial fermentation. In accordance with these facts and conjectures, I handed samples of the cheese to the public analyst for the borough (Mr. Kear Colwell), requesting him to test for tyro-toxicon or other poisons. I append his report, which speaks for itself. I may add that I share the opinion expressed by Mr. Colwell with regard to the wider application of Section 7 of Sale of Food and Drugs Act, 1899:

I received from the medical officer of health (Dr. Newman) on the under-mentioned dates four samples of cheese for examination, more particularly with regard to the presence of any substance which would have been likely to cause injury to health, all the samples being part of a consignment which he had reason to suspect.

Sample No.	*Weight.*	*Date of Receipt.*
I.	1 ounce	October 23rd, 1901.
II.	1½ ounces	October 28th, 1901.
III.	6 pounds	October 29th, 1901.
IV.	2½ pounds	November 8th, 1901.

Sample No. I. was very small in quantity, and consisted of a dry, hard piece of rind, evidently the unconsumed portion of a slice cut from a Dutch cheese.

Sample No. II. was a thin, dry, hard slice of the same kind of cheese as No. I.

There was nothing abnormal in the smell, colour, or taste of either of these samples, nor was I able to detect any mineral or organic poisons after an extremely careful examination.

Sample No. III., when handed to me, was normal in appearance and fairly moist. It had a peculiar sour smell, as though undergoing slight fermentation. On analysis of this sample, the following results were obtained:

Water	42·60 per cent.
Fat	18·83 „
Proteids, etc.	32·29 „
Mineral matter	6·28 „

These figures are fairly typical of ordinary Dutch cheese.

A careful examination was made for mineral poisons, with negative results, but from the cold aqueous extract of some 4 ounces, after treatment with ether and subsequent purification, I obtained a small quantity of a body possessing the characteristics of tyro-toxicon, a poisonous ptomaine, first isolated from cheese by Vaughan. Nothing is definitely known as to the exact mode of formation of this body, but it is probably the product of some organism, its production being generally associated with butyric fermentation. Vaughan considers it to be identical with diazo-benzine butyrate, but the evidence in favour of this view is not absolutely conclusive.

Exposed to moist air, tyro-toxicon is rapidly decomposed, and it is probably on this account that I failed to isolate it from samples Nos. I. and II., although No. I. had undoubtedly caused illness. Furthermore, it does not appear to be uniformly distributed through the cheese, as in sample No. III. portions were tested which did not yield tyro-toxicon. Some authorities consider this to be additional evidence of the fermentative origin of this ptomaine.

Sample No. IV., which was similar in composition to No. III., yielded tyro-toxicon after repeated tests.

In the present state of our knowledge with regard to the mode of formation of tyro-toxicon, no blame or negligence can be attributed to anyone; but in order to facilitate investigation when similar epidemics arise, I venture to suggest that the provisions of Section 7 of the Sale of Food and Drugs Act, 1899, which requires every manufacturer of margarine or margarine-cheese to keep a register showing the quantity and destination of every consignment sent out, should be extended to cheese, and that not only the representatives of the Board of Agriculture, but the medical officer of health of the local sanitary authority should have an opportunity of inspecting it when necessary.

(Signed) J. Kear Colwell.

November 22nd, 1901.

Tyro-toxicon has been proved to be a violent poison both to man and the lower animals. A minute portion administered to a child produced sickness and diarrhœa in a manner almost identical to

cholera infantum (Vaughan). Similar symptoms were obtained with cats and dogs. Vaughan found that three months are required for the formation of tyro-toxicon in milk kept in tightly-stoppered bottles; but under certain circumstances, and in the presence of butyric fermentation in milk, the poison is produced in about eight or ten days. A precisely similar, and possibly identical, poison occasionally occurs in cream and rancid butter (lacto-toxicon). It has the same poisonous effects.

I may add that the wholesale firm from which this consignment was retailed were good enough to furnish me with a record of this particular transaction. From this it appears that more than seventy or eighty cheeses were purchased by them, some being delivered to them on September 4th, and the remainder—the larger portion—on September 9th, 1901. They sold them in turn to several firms carrying on business in Marylebone, Tunbridge Wells, Barking, Islington, Bermondsey, and Finsbury. In some of these cases a sufficiently large number of cheeses were sent to allow of a wider distribution. I have made inquiries in the quarters to which these cheeses were sent, but I have only been informed of positive evidence of poisoning in two of the affected districts up to the present. By the courtesy of Mr. F., of Tunbridge Wells, who took twenty of these cheeses, I learn that he has received one complaint respecting them; but as he and two of his men ate some of the same consignment without ill effect, he surmises that "there could have been only one faulty cheese in the parcel, as we had no complaints as to the other nineteen cheeses." In the second place, I learned, on November 22nd, from the medical officer of health of Bermondsey (Dr. R. King-Brown) that he had been able to trace thirteen cases of poisoning to certain Dutch cheeses, of precisely the same kind, recently delivered in Bermondsey. It is not yet known whether this consignment was derived from the same shipment as that coming into Finsbury.

It will be readily understood that the effects of eating cheese from such a consignment are not likely to be uniform. Not all the cheeses need be poisonous, or in the same degree. Not all the persons consuming the cheese are traceable, for it is obvious that eighty Dutch cheeses might go a long way, and be eaten in various localities for a long period of time. The above record must therefore of necessity be an incomplete one. But the facts set forth are an unmistakable indication of a cheese-poisoning outbreak. There was no culpability on the part of any of the vendors.